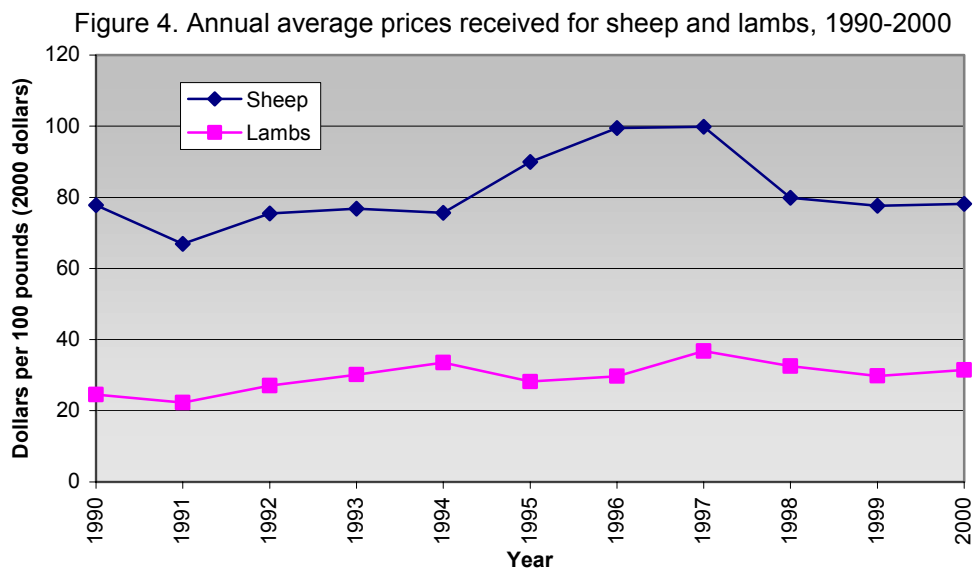


## Findings on California livestock prices

Prices for sheep, cattle, meat, wool, and other products tend to reflect global markets, trade factors, and other conditions.

### Sheep, lambs, and wool

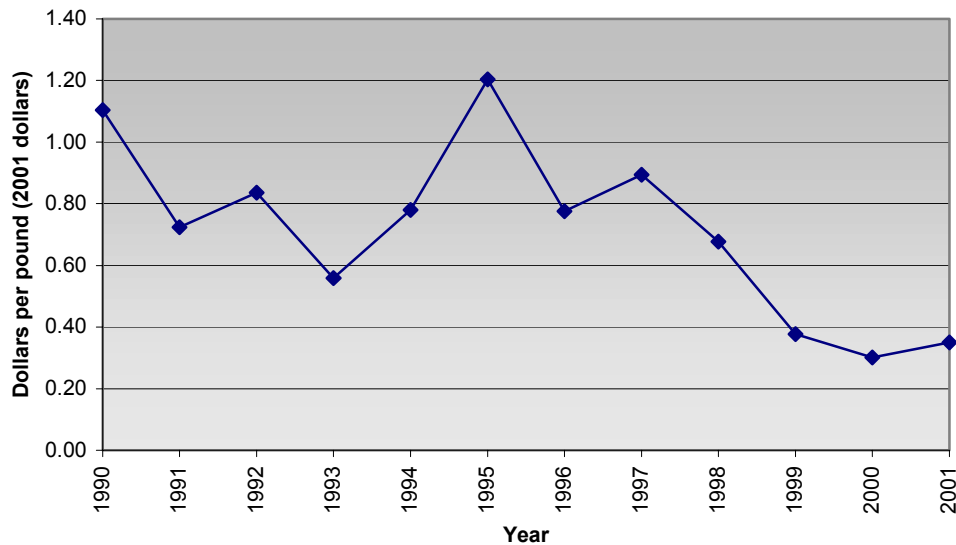
Prices in California markets for sheep and lambs have been relatively low for the last decade. This reflects a trend in national prices and varies between \$67.00 to \$100.00 per 100 pounds for sheep and \$22.00 to \$37.00 per 100 pounds for lambs (Figure 4) (California Agricultural Statistics Service, 2001b).



Source: California Agricultural Statistics Service, 2001b

Trends in U.S. wool prices closely mirror Australian wool prices. This is because the U.S. cut wool (wool clip) resembles Australian wool clip. Asia plays a major role in determining the price of U.S. wool because it is a major destination for Australian wool and Australian wool prices are largely dependent on the economic conditions of Asian countries. Furthermore, this determines American wool prices. However, wool prices are determined by other factors including physical characteristics, worldwide supply and demand conditions, and the market success of competing fibers both natural and man made. In California, wool prices per pound have shown wide variations since 1990 due to these factors, with generally declining prices since 1995 (Figure 5).

Figure 5. Sheep and lambs shorn, 1990-2001



Source: California Agricultural Statistics Service, 2001b

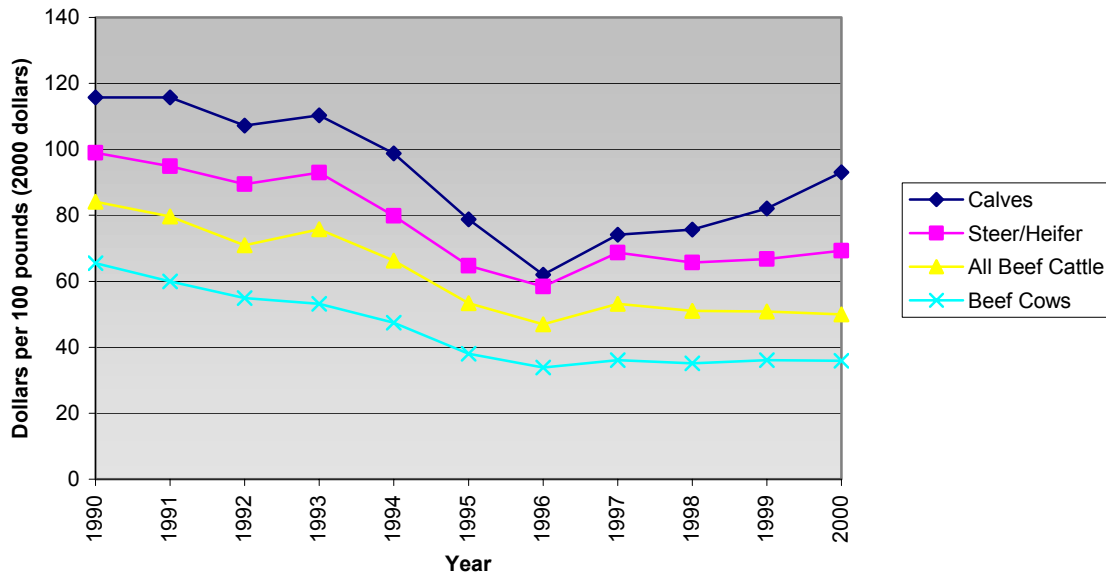
## Cattle and calves

There is a high degree of integration in the North American cattle market. U.S. cattle inventories exceed Canadian inventories by almost ten fold; thus, inventory highs and lows tend to parallel each other. U.S. and Canadian fed steer prices generally run closely together. In general, prices follow a definite cycle that is related to biological and market factors. Long-term cattle prices are determined in the U.S. market while the Canadian price is the U.S. price multiplied by the exchange rate and adjusted for transportation costs. Short-term price differences (i.e., daily or weekly margins) arise frequently, however, due to changes in supply and demand conditions on either side of the border (U.S. International Trade Commission, 1997).

**Foreign imports and beef prices:** Increasingly, American producers compete with foreign imports of beef. Boxed beef and other technical advancements allow foreign suppliers to deliver their beef to American markets at competitive prices. For example, several large hamburger and restaurant chains in the United States import significant portions of their meat. At the same time, growth of foreign producers has increased competition for American producers who wish to export. Nations like Australia and New Zealand export significant quantities of meat to Europe and Japan. This adds downward pressure on prices received for American cattle. This trend is likely to continue for the near future as prices in California largely reflect these kinds of factors. They, too, are cyclical and have varied greatly in the last decade.

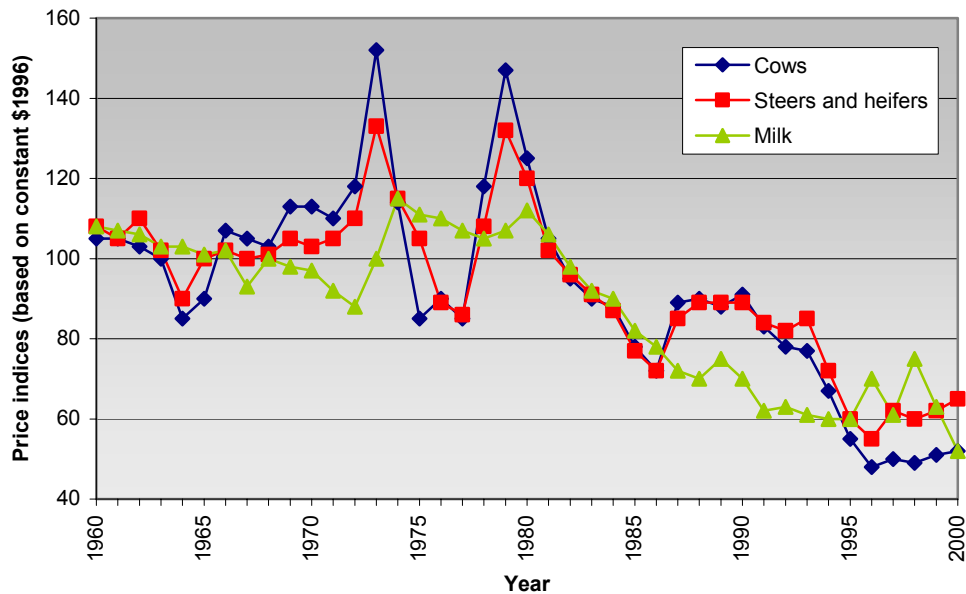
The price for live cattle began the 1990s with up-trending steer and heifer prices. The prices for steers and heifers then decreased and hit their lowest point in 30 years during May 1996. By 2001, prices had gained substantially (Sumner, 2001) (Figure 6). In the long term, real prices for cows and heifers have declined substantially (Figure 7).

Figure 6. Annual average prices received for cattle and calves, 1990-2000



Source: California Agricultural Statistics Service, 2001b

Figure 7. Price indices for cattle and milk, 1960-2000 (1965-67=100)



Source: Sumner, 2001

## Overview of farms with cattle, sheep and goats with focus on cattle farms except feedlots

Characteristics that relate to production of livestock in California include number of farms, acreage by size of ownership and operation, grazing permit use, operator characteristics, land tenure, and farm production costs. These data are collected by the USDA National Agricultural Statistics Service (NASS) as part of their five-year national census. In preparation of this assessment, FRAP contracted with NASS to provide a special statistical break down of data for California that gives detail for ten regions of the State. Table 3 and Figure 8 show the counties that make up these ten regions.

Table 3. NASS regions and the California counties they encompass

NASS region	County
North Coast	Mendocino, Humboldt, Del Norte
North Interior	Trinity, Siskiyou, Shasta, Lassen, Modoc
North and South Sacramento Valley/North Sierra	Solano, Yolo, Sutter, Sacramento, Colusa, Glenn, Tehama, Butte, Yuba, Plumas, Sierra
North Central and Central Sierra	Nevada, Placer, El Dorado, Amador, Calaveras, Tuolumne, Mariposa
North and South Bay	Lake, Napa, Sonoma, Marin, Contra Costa, Alameda, Santa Clara, San Mateo, Santa Cruz
Central/South Central Coast	Monterey, San Benito, San Luis Obispo, Santa Barbara, Ventura
North and Central San Joaquin Valley	San Joaquin, Stanislaus, Merced, Madera, Fresno
South San Joaquin Valley	Tulare, Kings, Kern
Eastside	Alpine, Mono, Inyo
South Coast/Mojave/Colorado Desert	Los Angeles, Orange, San Diego, San Bernardino, Riverside, Imperial

Figure 8. NASS regions



Source: compiled by FRAP from National Agricultural Statistics Service, 2001a

### Focus on forest and rangeland farms according to NASS statistics

Data for the regions separates out farms with cattle, sheep, and goats. Further subdivisions are made between all farms, principally crop farms, dairy farms, sheep and goat farms, feedlot farms, and beef cattle except feedlots. The category “beef cattle except feedlots” most closely approximates data available about the livestock industry reliant on forest and rangelands. Within this category, there are 5,000-6,000 dairy cattle on these farms, which is less than .01 percent of the total inventory. NASS statistics do not provide as much detail about sheep farms. While some information is provided, the majority of the sheep industry data is contained within a residual category not shown, which we call “sheep and goat farms and feedlots.” A significant portion of sheep farms within this category are located on or use forest and rangelands.

*The category “beef cattle except feedlots” most closely approximates data available about the livestock industry reliant on forest and rangelands*

### CASS statistical reporting

In addition to the agricultural census data, NASS has state offices that produce statistical information relevant for each state. The California office is known as the California Agricultural Statistics Service

(CASS), and produces farm information on a yearly basis. CASS statistical reports are more useful for studying trends, but do not give the detail contained within the NASS 5-year agricultural census. CASS numbers do not match the agricultural census numbers exactly. Numbers may be similar but due to different processes for data compilation, similar statistic types will not match exactly.

### **Overview of farm characteristics for cattle, sheep and goat farms**

An in-depth presentation of NASS statistics is presented in the FRAP Technical Paper entitled [Characteristics of the Range Livestock Industry](#). This section presents an overview of some key points.

#### **Number of farms with cattle, sheep and goats by land use**

In 1997, the number of farms with cattle, sheep and goats made up about 27 percent of all farms in California. The number of sheep, goat, and beef farms other than feedlots is estimated to be between 16 and 20 percent of the farms in the state (National Agricultural Statistics Service, 2001a).

Farms with cattle, sheep, and goats are found on cropland, woodland, and other land, such as pasture. NASS collects information about the number of farms and acreage by these categories. The number of farms with cattle, sheep and goats on cropland, woodland, or other land has been decreasing in every category statewide and in most regions throughout California since 1982. For more information, see table 2 in [Characteristics of the Range Livestock Industry](#).

#### **Acres in farms with cattle, sheep and goats by land use**

An analysis of farm acres within the agricultural census data was limited to the years 1992 and 1997. All acreage analyses are relegated to these two data points. In 1997, total acreage in farms in California reached almost 27.7 million acres. Of this acreage, farms with cattle, sheep or goats comprised almost 18 million acres, or 65 percent of the total. The range livestock portion of acreage in farms with cattle, sheep or goats is estimated to be between 50 and 54 percent of the total farm acreage in California. The acreage of farms with beef cattle makes up at least 90 percent of the total of range livestock acreage (National Agricultural Statistics Service, 2001a).

In 1992, total land in farms with cattle, sheep, and goats in California totaled more than 19 million acres. By 1997, this had declined by eight percent to approximately 18 million acres (National Agricultural Statistics Service, 2001a). For more information, see table 3 in [Characteristics of the Range Livestock Industry](#). Regionally, an accurate assessment of regional acres could not be performed due to withheld data.

#### **Farm organization by farm type**

Farm organization provides another way to view farms in California. Sole proprietorship by far is the most common form of ownership in all farms and farms with cattle sheep and goats. Partnership is the second most common form, with family-held corporations next. In 1997, about three quarters of all farms were in sole proprietorship (National Agricultural Statistics Service, 2001a). About 85 percent of farms reported as beef cattle except feedlots are sole proprietorships.

Regionally, the majority of sole proprietorship owned farms within the range livestock industry resides within the North and South Sacramento Valley, North and South Bay, North and Central San

Joaquin Valley and the Central/South Central Coast regions. Sole proprietorship farms have decreased in all regions. The largest decreases occurred in the South Coast/Mojave/Colorado Desert and North/South Bay regions between 1982 and 1997. Partnership owned farms within the range livestock industry have decreased but at lesser rates. Partnership farms have remained stable within the Central/South Central Coast and South San Joaquin Valley region (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

### **Farm organizations by acreage**

In 1997, about 14 million acres or 51 percent of all farm acreage were in sole proprietorship. About nine million acres of beef cattle farms other than feedlots were in sole proprietorship. Approximately 7.6 million acres or 28 percent of all farm acreage were under partnership, which includes about 3.1 million acres in beef cattle farms other than feedlots (National Agricultural Statistics Service, 2001a).

*In 1997, 51 percent of all farm acreage was in sole proprietorship.*

In 1997, The North and South Sacramento Valley and Central/South Central Coast held 34 percent of sole proprietorship farms within the range livestock industry. Sole proprietorship acreage within the range livestock industry has increased between 14 and 17 percent within the South San Joaquin Valley and one to two percent within the Central/South Central Coast between 1992 and 1997. All other regions have decreased (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

### **Number of farms in full ownership, part ownership, and renters**

California farm ownership is split between full ownership, part ownership and renters (tenants). Across all farms, the majority of farmers own their farms. The same is true for beef farms other than feedlots. However, from 1982 to 1997, the number of full owners of beef farms other than feedlots declined from 10,094 farms to 6,850 farms, or 32 percent. Most of this decline was in ownership of farms less than 500 acres in size. Similar magnitudes of declines between 1982 and 1997 were seen in the number of part owners and tenant farms less than 50 acres. Percentages of farms over 50 acres part or tenant owned grew somewhat over the same period (National Agricultural Statistics Service, 2001a). For more information, see Table 7 in [Characteristics of the Range Livestock Industry](#).

Fully owned beef cattle farms, except feedlots, decreased regionally much more sharply between 1982 and 1997 within the North/South Bay and the South Coast/Mojave/Colorado Desert. In contrast, the North Interior and Central/South Central Coast decreased at a much slower rate than the State average. Part owner beef cattle farms excluding feedlots experienced large decreases between 1982 and 1997 within the North/South Bay and the South Coast/Mojave/Colorado Desert regions. Part owner farms increased within the North/South Sacramento Valley/North Sierra, Central/South Central Coast, South San Joaquin Valley, and Eastside regions (National Agricultural Statistics Service, 2001a).

Tenant beef cattle farms excluding feedlots have decreased more dramatically within the North Coast, North/South Bay, and South Coast/Mojave/Colorado Desert regions between 1982 and 1997. Tenant farms have increased within the North Interior, North Central/Central Sierra, Central/South

Central Coast, North/Central San Joaquin Valley, and Eastside regions (National Agricultural Statistics Service, 2001a).

Regionally, full owner, part owner, and tenant beef cattle farms excluding feedlots decreased much more rapidly on smaller farms between 1982 and 1997. As farm size increases, farm losses become less dramatic and in some cases increase. On average, all California regions reflect this trend (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

### **Acreage of farms in full ownership, part ownership, and renters**

By acreage, farms in full ownership control only about 30 percent of the acreage in California. Part owners control just over 50 percent of acreage with tenants controlling 19 percent. This division reflects the fact that in the beef cattle industry, farmers often rent additional pasturage to supplement forage on their range. This is especially true on large farms, as over 80 percent of part owner and tenant acreage is associated with farms over 2000 acres in size (National Agricultural Statistics Service, 2001a).

The relative proportion of acres controlled by the three classes of owners was about the same in both 1992 and 1997. There was a decline of about a million acres in beef cattle farms between these years and most of this was reflected in fewer acres under part ownership (National Agricultural Statistics Service, 2001a). For more information, see Table 8 in [Characteristics of the Range Livestock Industry](#).

Between 1992 and 1997, full owner acres on beef cattle farms excluding feedlots increased 13 percent in the North Coast and 14 percent in the Central/South Central Coast regions. All other regions had decreases, the largest of which occurred within the North Central/Central Sierra and North/South Sacramento Valley/North Sierra. Part owner acres increased 10 percent in the North Central/Central Sierra and four percent in the Central/South Central Coast. All other regions decreased. Tenant farm acres increased 11 percent in the North Central/Central Sierra, five percent in the Central/South Central Coast, and 52 percent in the North/Central San Joaquin Valley. All other regions decreased (National Agricultural Statistics Service, 2001a).

In 1997, only the North Coast and North Interior regions had a majority amount of beef cattle farm acres under the control of full owners. Conversely, part owner acres were well below the State average within these regions. The proportion of part owner acres to total owner acres was greater than the State average in the South Coast/Mojave/Colorado Desert, North/South Sacramento Valley/North Sierra, and the North/Central Sierra region. Tenant acres did not stray very far from the State average within every region (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

### **Farms by principal occupation and length of ownership**

*Statewide, in 1997, just over 53 percent of operators had farming as their principal occupation.*

Statewide, in 1997, just over 53 percent of operators had farming as their principal occupation. However, on all beef cattle farms excluding feedlots, only 47 percent of operators listed farming as their principal occupation. For beef cattle farms except feedlots less than 500 acres, 60 percent of the operators had principal occupations other than farming; on farms 500 acres or greater, over 66 percent of the



operators indicated that farming was the principal occupation (National Agricultural Statistics Service, 2001a). These percentages are approximately the same as 1992.

In 1997, the average number of years for the operator on all farms in California was 17.6 years. For beef cattle farms excluding feedlots, the average was 19.4 years. Over 68 percent of these operators had spent 10 or more years on the farm (National Agricultural Statistics Service, 2001a).

Regionally, with the exception of the Eastside region, the percentages of operators with farming as their principal occupation are within about 10 percent of the State average. In the Eastside region, a much higher proportion of farmers list farming as their principal occupation (National Agricultural Statistics Service, 2001a).

From a regional standpoint, in 1997, operators with more than ten years of service on beef cattle farms except feedlots mirrored the statewide average in every region except the North/South Bay. The North/South Bay had a larger proportion of operators with more than 10 years of service than all other regions (National Agricultural Statistics Service, 2001a).

In 1997, operators with less than five years of service on beef cattle farms excluding feedlots differed from the California average in four of the agricultural census regions. The North/South Bay and North Coast regions had a smaller proportion of operators with less than five years experience than the statewide average. The North Interior region had a large proportion of operators with less than five years experience than the statewide average (National Agricultural Statistics Service, 2001a). For more information, see Table 10 in [Characteristics of the Range Livestock Industry](#).

### **Findings on production of sheep, lambs, and wool**

In the United States, sheep operations can be characterized as herded range flocks, fenced range flocks and farm flocks. In 1996, herded range flocks accounted for only one percent of the total operations with sheep in the U.S, but they included almost 19 percent of the U.S. sheep inventory. Ten percent of U.S. sheep operations were fenced range flocks containing about 37 percent of total U.S. sheep inventory. Farm flocks comprised almost 85 percent of the U.S. operations and about 35 percent of the U.S. sheep inventory. Two common sheep varieties include black face and fine wool white face sheep. See [Reference of 1996 U.S. Sheep Health and Management Practices](#).

In California, sheep and lamb operations typically reflect factors such as the climate, season, elevation, and available feed. In many lower elevation locations, ranchers use alfalfa hay in the fall and then graze foothill pastures. Sheep may be transported to higher elevation mountain ranges where excellent forage exists. In other cases, sheep and lambs are grazed on irrigated pastures with a cover crop such as clover. Sheep in the foothills seldom share pasture with cattle. See [Appendix A, California's Livestock Industries in: Potential Impact of Foot and Mouth Disease in California](#).

The primary products of the sheep industry in the United States are lambs. Lambs are immature sheep, usually younger than 14 months old at time of slaughter. Lamb meat is more valuable than sheep meat (mutton), so most animals raised for meat are slaughtered as lambs. The domestic lamb industry in the United States can be divided into four sectors: growers, feeders, packers, and processors (called “breakers”).

The category of growers include breeders who raise purebred animals and sell rams for breeding purposes and commercial market lamb producers who keep flocks for the production of feeder or slaughter lambs. In the United States, lambs are generally born in the spring and range-fed until fall, when they are sent to feeders. California is an exception to this because of its mild climate. Lamb is available throughout the year. In some locations, mild seasons allow lambs to be sold to market directly from weaning (milkfed spring lambs). In other locations, spring born lambs will be available from summer through winter.

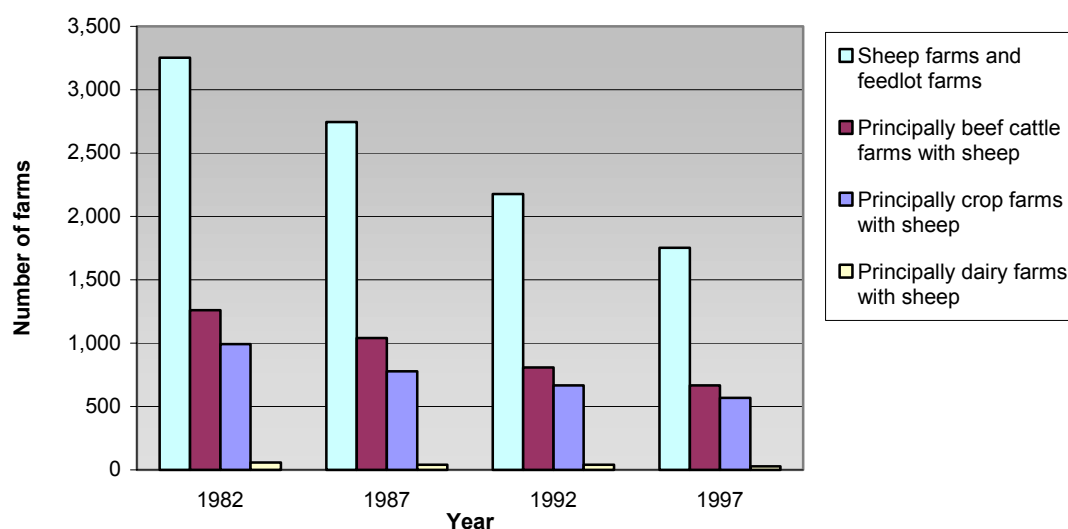
Feeders include the maintenance of feedlots where lambs are fed on grain or other food until they reach slaughter weight, typically 30 to 120 days. Feeders then send them to packers for slaughter. Packers then further process the lamb into various cuts or ship the carcasses to breakers who perform a similar processing function. The cuts are then sold to non-processor wholesalers or retail outlets. Most domestically produced lamb meat is sold fresh or chilled (U.S. International Trade Commission, 1999).

### Sheep and lamb farms

In 1997, NASS reports that there were 3,014 farms with sheep and lamb inventory. NASS data received by FRAP does not permit detailed analysis about sheep and lamb farms. The detailed accounting for beef cattle farms excluding feedlots provides information for only 22 percent of all sheep and goat farms. Dairy and crop farms account for another 20 percent. However, from the data, it is clear that sheep and lamb farms are not a significant part of beef cattle operations; to the extent that sheep are present, they are much more likely to be found on ranches less than 500 acres in size. Total farms with sheep and lambs have declined 46 percent between 1982 and 1997. All farm types with sheep and lambs have had similar declines during the same period (National Agricultural Statistics Service, 2001a) (Figure 9).

*Total farms with sheep and lambs have declined 46 percent between 1982 and 1997.*

Figure 9. All farms with sheep and lambs by farm category, 1982, 1987, 1992 and 1997



Source: National Agricultural Statistics Service, 2001a

Table 4. Number of farms with sheep by farm category, 1982, 1987, 1992 and 1997

Year	All farms with cattle sheep and goats	Principally crop farms	Beef cattle farms excluding feedlots	Dairy farms	Sheep and goat farms and feedlot farms
1982	5,565	993	1,261	58	3,253
1987	4,602	778	1,040	40	2,744
1992	3,692	667	809	40	2,176
1997	3,014	568	667	27	1,752

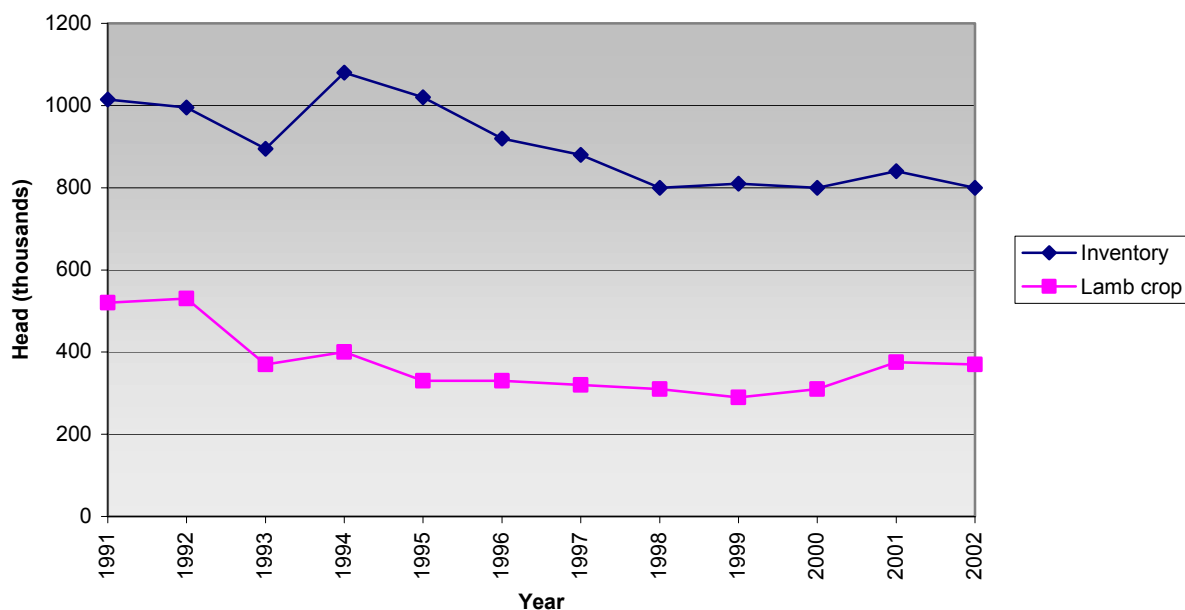
Source: National Agricultural Statistics Service, 2001a

## Sheep and lamb inventory

The yearly beginning inventory (reflecting inshipments, marketings, and other factors in the previous year) of sheep and lambs in California has ranged from about 1.1 million animals in 1994 to about 800,000 animals in 1998 and 2000. From 1996-2000, the lamb crop averaged about 37 percent of the total inventory. However, from 2001-2002 that number climbs to 45 percent (Figure 10). Inshipments of lambs from 1996 to 2000 averaged about 365,000 animals per year. Much of this inshipment goes to feedlots in the Imperial Valley or Kern County (California Agricultural Statistics Service, 2001b).

**The U.S. sheep inventory:** In size, the U.S. sheep inventory declined from a high of 56 million head in 1942 to a low 7.2 million head in 1999. The decrease came from several sources, most notably from declining wool demand, smaller consumption of lamb and mutton, and increased import competition. Since 1975, the number of sheep and lambs has decreased by half, with the average flock size ranging between 93 and 113 head. There are also 25 percent fewer operations with sheep. Since 1990 (the last year to show a year-to-year increase in sheep), the U.S. inventory has dropped 36 percent (Thomas, 1999).

Figure 10. Inventory of sheep and lamb crop, 1991-2002



Source: California Agricultural Statistics Service, 2001b

The majority of farms with sheep and lambs had small herd sizes. Eighty-eight percent of farms with sheep and lambs had herd sizes less than 100 head in 1997. Farms with over 1000 head, although small in numbers, constitute a significant portion of the inventory. Approximately 110 farms with sheep and lambs reported having inventories greater than 1000 head in 1997. Approximately 500,000 to 600,000 sheep and lambs reside on farms greater than 1000 head. These farms with large herd sizes hold between 68 and 79 percent of total sheep and lamb inventory (National Agricultural Statistics, 2001a) (Table 5).

Table 5. Number of farms with sheep and lambs by farm type, 1982-1997

Year and herd size	All farms w/cattle, sheep and goats	Principally crop farms	Beef cattle farms excluding feedlots	Dairy farms	Sheep and goat farms and feedlot farms
Sheep/lambs (all farms)					
1982	5,565	993	1,261	58	3,253
1987	4,602	778	1,040	40	2,744
1992	3,692	667	809	40	2,176
1997	3,014	568	667	27	1,752
Sheep/lambs (farms w/1-24 head)					
1982	3,668	671	922	46	2,029
1987	2,826	527	743	26	1,530
1992	2,274	463	565	23	1,223
1997	1,894	407	483	16	988
Sheep/lambs (farms w/25-99 head)					
1982	1,083	167	215	4	697
1987	1,089	138	205	7	739
1992	875	114	155	9	597
1997	746	95	133	8	510
Sheep/lambs (farms w/100-299 head)					
1982	359	68	79	2	210
1987	303	54	53	4	192
1992	264	44	50	5	165
1997	189	30	34	2	123
Sheep/lambs (farms w/300-999 head)					
1982	214	38	32	4	140
1987	185	24	26	2	133
1992	132	18	28	1	85
1997	75	16	9	0	50
Sheep/lambs (farms w/1000+ head)					
1982	241	49	13	2	177
1987	199	35	13	1	150
1992	147	28	11	2	106
1997	110	20	8	1	81

Source: National Agricultural Statistics Service, 2001a

Within the agricultural census regions farm inventory by herd size can be used to estimate the inventory of sheep and lambs within each region. Much like the statewide average, the majority of farms with sheep and lambs have small herd sizes; however, the majority of the inventory is in farms that have head sizes greater than 1000 (National Agricultural Statistics Service, 2001a).

The North Interior, North Coast, North Central/Central Sierra, Central/South Central Coast, and Eastside agricultural census regions all had small inventories of sheep and lambs ranging from 7,000 to 37,000 head in 1997. The majority of inventories resided on farms less than 1000 head, only the Eastside and North Interior regions had the majority of their sheep and lamb inventories residing on farms greater than 1000 head. These regions also saw inventories decrease substantially between 1992 and 1997 (National Agricultural Statistics Service, 2001a).

The North/South Bay and North/Central San Joaquin Valley regions had moderate sheep and lamb inventories in 1997. Between 70 and 90 percent of the sheep and lamb inventory in the North/Central San Joaquin Valley is located on farms with herd sizes greater than 1000 head. Within these two regions, a large proportion of farms with sheep and lambs fall into the “sheep and goat farms and feedlot farms” category (National Agricultural Statistics Service, 2001a). Solano County, in particular, has a large feedlot presence.

The North/South Sacramento/North Sierra, South San Joaquin, and South Coast/Mojave/Colorado Desert agricultural census regions had large sheep and lamb inventories. The largest concentration of sheep in the State is recorded in the southern San Joaquin Valley (especially Kern and Fresno counties). However, the location changes with the season and condition of the pastures. In summer and fall, sheep are concentrated into alfalfa fields and unfenced pastures in the southern San Joaquin Valley; in the winter they are transported to pastures in the Imperial Valley, Northern California, or to other states.

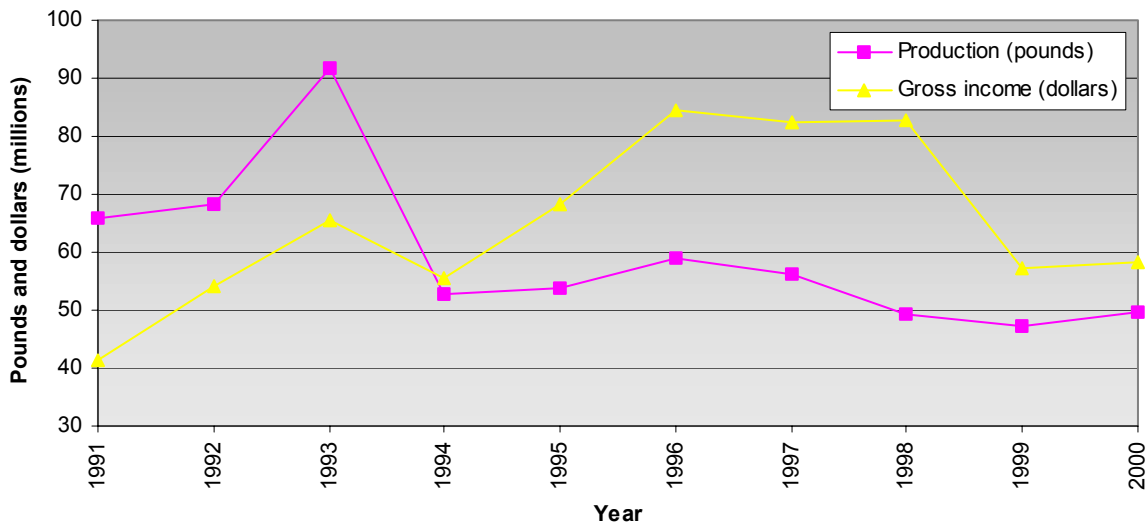
The majority of the inventory is within the North/South Sacramento Valley/North Sierra and the South Coast/Mojave/Colorado Desert. In addition, the South San Joaquin Valley is believed to hold a significant portion of the inventory, however, the data was withheld and an accurate count of the inventory is unavailable. The South Coast/Mojave/Colorado Desert region held 29 percent of California’s sheep and lamb inventory and only one to seven percent of the inventory was located on farms with less than 1000 head in 1997. The sheep and lamb inventory within the South Coast/Mojave/Colorado Desert regions increased 53 percent between 1992 and 1997. The South San Joaquin region did hold the most farms with inventories greater than 1000 head in California followed by the South Coast/Mojave/Colorado Desert and North/South Sacramento/North Sierra regions. The North/South Sacramento/North Sierra held 19 percent of the total sheep and lamb inventory in 1992 and likely held close to the same percentage in 1997. Between 53 and 87 percent of the sheep and lamb inventory within the North/South Sacramento/North Sierra region resided on farms greater than 1000 head in 1992 (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

### **Sheep and lamb production and value**

Total production of sheep and lambs in California in all farm types over the last decade has varied from 92 million pounds in 1993 to 47 million pounds in 1999. Total gross income has varied from \$85 million in 1996 to \$42 million in 1991 (California Agricultural Statistics Service, 2001b) (Figure 11).

*Total production of sheep and lambs in California in all farm types over the last decade has varied from 92 million pounds in 1993 to 47 million pounds in 1999.*

Figure 11. Income and production of sheep and lambs, 1991-2000



Source: California Agricultural Statistics Service, 2001b

In 2000, Inyo County produced the largest value from sheep and lambs (\$12 million). Based on value, the largest concentration of sheep in 2000 was feedlots in Solano (\$9 million), Imperial (\$6 million), and Fresno (\$4 million) counties. Statewide, over 30 percent of sheep production value was in feedlots (California Agricultural Statistics Service, 2001b).

Today, sales of lamb and cull ewes for slaughter and consumption are the main source of income for the sheep industry including California. The supply of lamb meat is determined by the size of the domestic herd. The ability of producers to adjust herd size is somewhat limited in the short run. Over the long term, production costs, availability of grazing land, and market conditions for other sheep products can influence the availability of lambs.

### Sheep and lamb wool production and value

The value of wool production in California declined from a high of about \$6.3 million in 1990 to a low of \$1.2 million in 2000 (California Agricultural Statistics Service, 2001b) (Table 6).

Table 6. Shorn, wool production, and value of sheep and lambs, 1990-2001

Year	Sheep/lambs shorn (1,000 head)	Production (1,000 pounds)	Total value (\$1,000)
1990	1,015	7,646	6,270
1991	930	7,160	4,010
1992	880	6,780	4,543
1993	800	6,044	2,780
1994	695	5,318	3,457
1995	690	5,250	5,355
1996	640	4,860	3,256
1997	470	3,800	3,002
1998	480	3,600	2,196
1999	480	3,630	1,271
2000	530	4,000	1,160
2001	510	3,750	1,313

Source: California Agricultural Statistics Service, 2001b



California has no large wool mills. U.S. mills import wool from Australia and New Zealand. Australia provides finer wool used in apparel, while New Zealand wool is usually coarser and is used in industrial and home interior products. China, Hong Kong, and Italy are also big wool importers.

**Wool in the United States:** Most of the U.S. wool output is confined to two regions: the “territory” states and the “fleece wool” states (Thomas, 1999). Approximately 70 percent of the sheep are in Texas, South Dakota, the Rocky Mountains, and the Pacific Coast states including California. Wool from these areas is called “territory” wool. These grades of wool are utilized in making better quality apparel.

The other sheep producing areas are Virginia, West Virginia, Pennsylvania, states north of the Ohio River, and the Great Plains area. Wool from these areas is known as “fleece” wool. These are medium grades used to make coats, blankets, and sweaters.

The U.S. sheep industry traditionally focuses on wool during the spring months. Approximately 63 percent of American-produced wool is shorn during April, May, and June. In 1999, the U.S. sheep industry produced approximately 46.5 million pounds of wool. At the same time, income dropped to just over \$1 million.

Wool sales accounted for less than 9 percent of U.S. revenues from sheep and lamb products in 1996 and 1997 and have continued to decline. In the last decade, both numbers of sheep and lambs shorn have declined from a high in 1990 of over one million to about 500,000 in 1999.

### Findings on cattle and calves

In California, there are three primary types of beef cattle operations: cow-calf, stocker, and feedlot. Cow-calf operations keep a herd of cows to breed along with replacement heifers and bulls. Steer calves and most heifer calves are sold, but a few heifers are held to enter the breeding herd. Calves are sold at time of weaning or are held as stockers. One additional operation is Seedstock, which are specialized cow-calf operations that seek to make genetic improvements in cattle.



*Cow-calf operations seek to make genetic improvement in cattle.*

Stocker operations grow steer and/or heifer calves or yearlings on range forage or other roughages. Commonly, cattle are obtained following weaning in the fall. They are wintered on low quality feed until spring grass can adequately support the animals. Grazing seasons depend on a variety of conditions such as geography and climate. Stocker cattle typically are sent to feedlots at the end of the grazing season when the nutritional value of the forage starts to decline.

Feedlots concentrate large numbers of cattle in specialized facilities that can efficiently feed and water the animals. Supplements can be added to the feed and high-energy value can be maintained. Feedlot cattle more quickly reach market weights.

Calves or stocker cattle usually remain on rangelands or pastures until they weigh 600 to 700 pounds. Northern California supplies 400-700 pound cattle to feedlots in other regions. Cow-calf operations are the most common in California (CH2M HILL, 1989; Anderson et al., 2002).

Most cattle produced in California are crossbred to combine or match wanted characteristics from two or more breeds. In a particular region, crossbreeding may focus on different traits. Selection of a

breed or breeds is based on many things, such as desired characteristics, personal preference, effort, and market demand. Seedstock and cow-calf producers may use artificial insemination to introduce breeds into herds.

Beef cattle can reproduce throughout the year. They are not seasonal breeders like horses, sheep, or goats. This allows producers more flexibility to adjust breeding to have cows calve at the most favorable time of the year. Although calving may occur at any time, it usually occurs in the fall and spring. Puberty normally occurs in both bulls and heifers by the time they are six to 18 months old. The age of puberty is related to the breed and environmental factors such as climate and forage condition. California differs from many other states in that 60-70 percent of its calf crop is born in the fall and over winters with the mother on winter pasture.

### Beef cattle farms excluding feedlots

In 1997, there were over 11,500 beef cattle farms excluding feedlots in California. The number of beef cattle farms has declined 22 percent between 1982 and 1997. The majority of this decline has been seen in farms less than 500 acres in size. Farms greater than 2,000 acres have slightly increased over the same period. Farm declines diminish as the size of the farm increases (National Agricultural Statistics Service, 2001a) (Table 7).

*The number of beef cattle farms has declined 22 percent between 1982 and 1997.*

Table 7. Number of beef cattle farms excluding feedlots by farm size, 1982, 1987, 1992, and 1997

Year	All beef cattle farms	Beef cattle farms 1-49 acres	Beef cattle farms 50-499 acres	Beef cattle farms 500-1999 acres	Beef cattle farms 2000+ acres
1982	14,850	7,342	4,234	1,863	1,411
1987	14,092	6,112	4,406	2,053	1,521
1992	12,288	5,044	3,930	1,852	1,462
1997	11,510	4,452	3,794	1,827	1,437

Source: National Agricultural Statistics Service, 2001a

The range livestock industry utilizes cropland, woodland, and pasture/range for forage. Ranches may use some or all of these resources. The majority of beef cattle farms used cropland and pasture/range other than cropland or woodland for grazing in 1997. Farms greater than 2000 had a greater dependence on pasture/range other than cropland or woodland for grazing than smaller farms (National Agricultural Statistics Service, 2001a) (Table 8).

Table 8. Number of beef cattle farms excluding feedlots using forage resources by farm size, 1997

Forage resources	All beef cattle farms	Beef cattle farms 1-49 acres	Beef cattle farms 50-499 acres	Beef cattle farms 500-1999 acres	Beef cattle farms 2000+ acres
Number farms	11,510	4,452	3,749	1,827	1,437
Farms using cropland for grazing	4,680	1,969	1,727	618	366
Farms using woodland pastured	895	117	366	232	180
Farms using woodland not pastured	613	104	282	127	100
Farms using pasture/range other than crop/woodland	5,980	1,304	1,916	1,400	1,360

Columns are not additive since farms may use one, many or other forage resources

Source: National Agricultural Statistics Service, 2001a

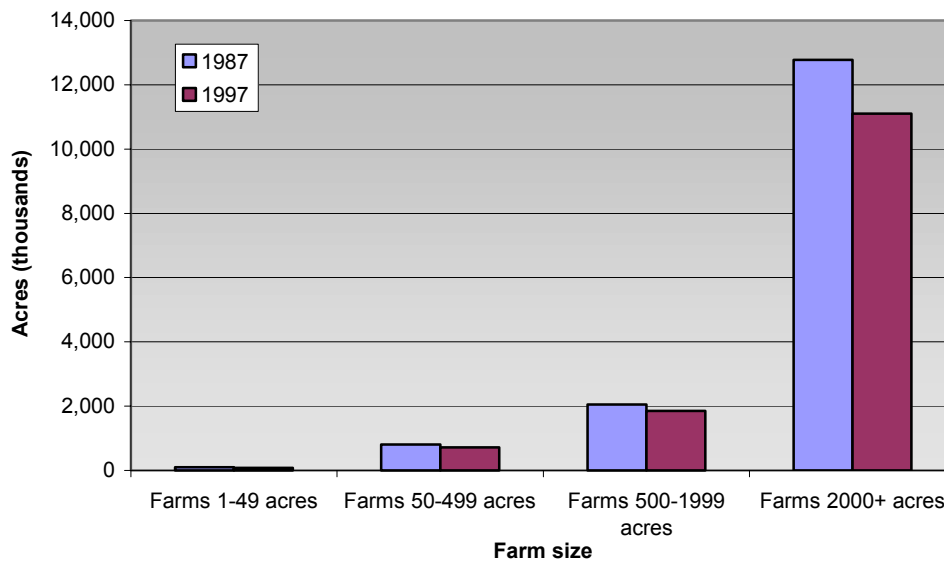


The number of beef cattle farms excluding feedlots using woodland forage has decreased rapidly within the North/South Bay and South San Joaquin Valley regions. In contrast, the North Interior region has decreased at a much slower rate than the rest of the regions between 1982 and 1997. Farms on land other than cropland or woodland using forage have decreased rapidly within the North/South Bay and the South Coast/Mojave/Colorado Desert regions. All other regions had minimal farm declines and in some cases increased (National Agricultural Statistics Service, 2001a). For more information see [Characteristics of the Range Livestock Industry](#).

### Beef cattle farm acreage excluding feedlots

In 1997, the acreage in beef farms except feedlots in California was 13.7 million acres compared to 15.7 million in 1987. As seen in Figure 12, the largest acreage by far is owned by enterprises over 2000 acres in size. Between 1987 and 1997, farm acreage has declined 13 percent (National Agricultural Statistics Service, 2001a).

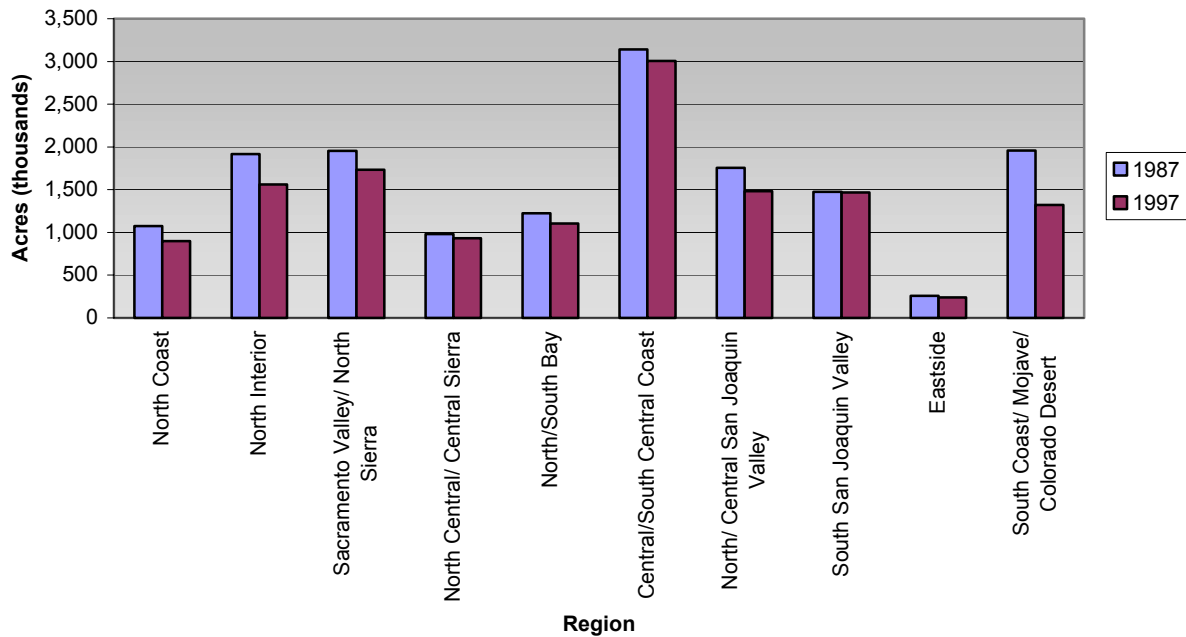
Figure 12. Area of beef cattle farms excluding feedlots by farm size, 1987 and 1997



Source: National Agricultural Statistics Service, 2001a

The majority of beef cattle farm acreage is held within the Central/South Central Coast region. All regions have had acreage declines between 1987 and 1997. Most regions have had minimal acreage declines, however, the South Coast/Mojave/Colorado Desert region decreased 32 percent or 635,000 acres (National Agricultural Statistics Service, 2001a) (Figure 13).

Figure 13. Area of beef cattle farms excluding feedlots by NASS region, 1987 and 1997



Source: National Agricultural Statistics Service, 2001a

In 1997, acreages utilized for forage from cropland, woodland, and pasture/range vary by owner. The largest use is of pasture and range other than cropland and woodland by farms over 500 acres. Farms greater than 2000 acres dominate acreage used for grazing (Table 9). Due to disclosure reasons, a regional analysis cannot be completed on the amount of acreage farms are using as forage resources (National Agricultural Statistics Service, 2001a).

Table 9. Area used by beef cattle farms excluding feedlots as forage resources by farm size (acres), 1997

Forage resources	All beef cattle farms	Beef cattle farms 1-49 acres	Beef cattle farms 50-499 acres	Beef cattle farms 500-1999 acres	Beef cattle farms 2000+ acres
All farms	13,744,272	75,711	713,527	1,856,193	11,098,841
Cropland acreage used for grazing	799,162	28,880	218,765	248,750	302,767
Woodland, pastured, acreage used for grazing	500,233	1,571	37,624	110,760	350,278
Woodland, not pastured, acreage used for grazing	204,403	1,004	21,730	38,326	143,343
Pasture/range acreage, other than cropland or woodland, used for grazing	11,347,526	21,921	306,548	1,268,835	9,750,222

Woodland is defined by Nass as natural or planted woodlots or timber tracts, cutover and deforested land with young growth which has or will have value for wood products, and woodland pastured.  
Numbers in columns are not additive since farms may use one, many or other forage resources

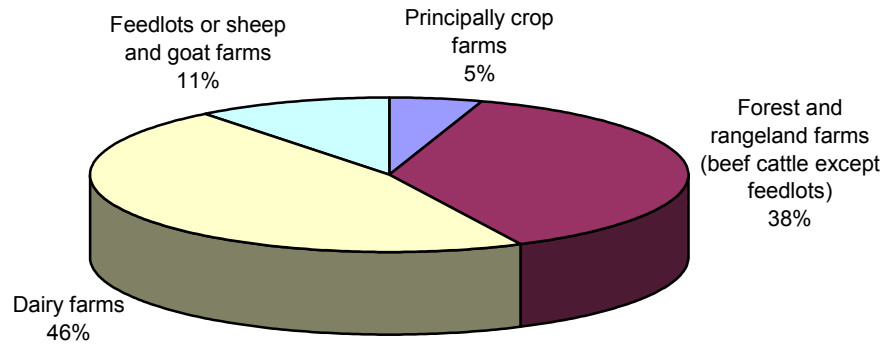
Source: National Agricultural Statistics Service, 2001a

## Cattle and calf inventory

Over the decade, total cattle inventory (including beef and dairy cattle) on all farm types in California has ranged from about 4.5 million in 1996 to 5.1 million in both 1999 and 2000 (California Agricultural Statistics Service, 2001b). Of this amount, 1.9 million head were in the beef cattle except

feedlots category in both years, or 40 percent in 1992 and 38 percent in 1997. Nearly half of the cattle inventory in 1997 was in dairy farms (Figure 14).

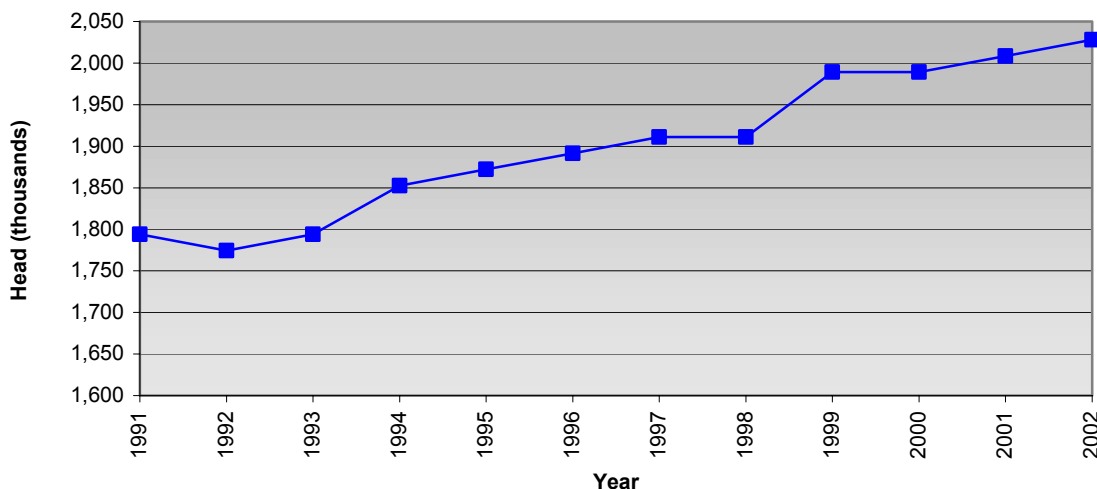
Figure 14. Cattle inventory by farm type, 1997



Source: National Agricultural Statistics Service, 2001a

Using 39 percent as an average percent of the total cattle inventory residing on beef cattle farms excluding feedlots, the beginning inventory on January 1 from 1991 to 2001 is shown in Figure 15. The inventory has increased steadily since 1991.

Figure 15. Estimated cattle inventory on beef cattle farms excluding feedlots, 1991-2002



Source: California Agricultural Statistics Service, 2001b

**Cycles in U.S. cattle inventory:** There have been cyclical fluctuations in numbers of cattle recorded in the U.S. since as early as 1867. This cycle averages eight to 12 years (Economic Research Service, 2000b) and is associated with the biological nature of cattle production and of how producers react to market prices. The actual length of the cycle depends on a number of economic or natural factors. These factors include weather, feed grain, cattle imports and exports, feed prices, relative prices, changing consumer income, preferences, and purchases. The United States commodity program policies also can impact the cattle cycle by causing substitutions between farmland use as cropland or as improved pasture. (U.S. Department of Agriculture, 2000).

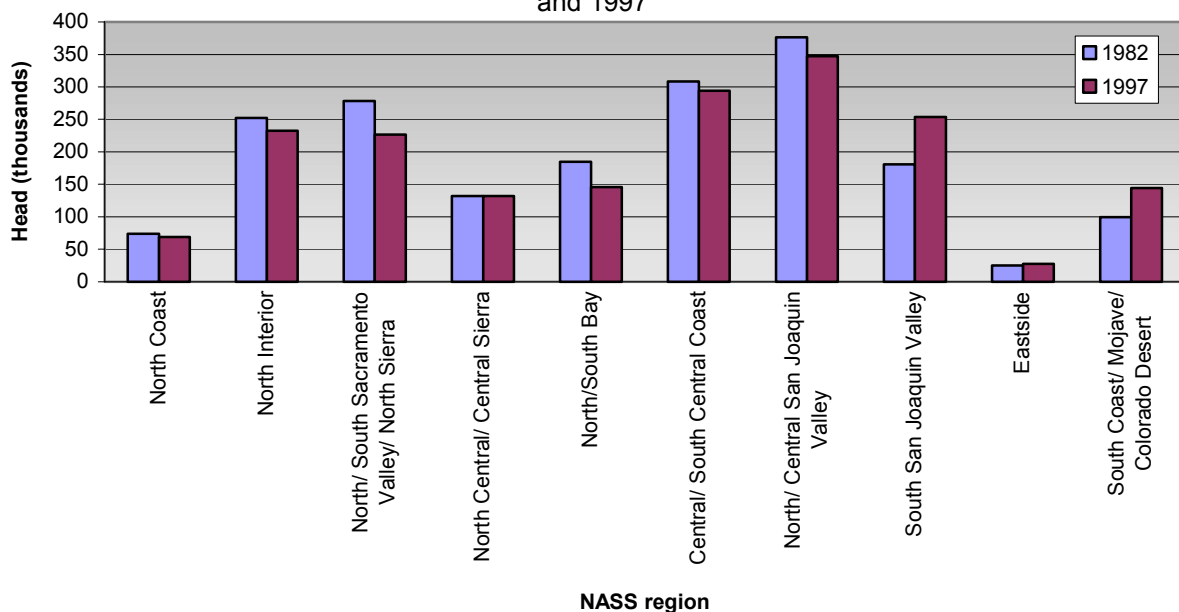
There is substantial movement of cattle into and out of California. Because of abundant grassland, it is common for operators to purchase cattle from outside California, ship them to California to eat the winter and spring grass, and send these animals out-of-state for finishing and processing (Ekboir, 1999). Because most feedlots are located outside of California in areas where cattle can be fed more cheaply, most meat processing plants also exist out-of-state. In 2001, 386,000 head of cattle were brought into California, with an estimated 60 percent going to winter pasture and the remainder to feedlots (Hoyt, 2002).

Regional differences in the change in cattle inventory on beef cattle farms excluding feedlots are also evident. Only the South San Joaquin Valley and South Coast/Mojave/Colorado Desert regions have had measurable inventory increases between 1982 and 1997. All other regions have had inventory decreases (National Agricultural Statistics Service, 2001a) (Figure 16).

*Between 1982 and 1997, cattle inventory on beef cattle farms excluding feedlots increased within the South San Joaquin Valley and South Coast/Mojave/Colorado Desert while all other regions decreased.*

Regionally, the majority of the cattle inventory located on beef cattle farms excluding feedlots resided within the North/Central San Joaquin Valley and Central/South Central Coast regions in 1997 (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

Figure 16. Inventory of cattle and calves on beef cattle farms excluding feedlots by NASS region, 1982 and 1997



Source: National Agricultural Statistics Service, 2001a

Since 1982 the inventory has been spread across fewer farms. This is true for every herd size class. In 1997, nearly all agricultural census regions had the majority of their beef cattle inventories within farms greater than 2000 acres. The Eastside, North Interior and Central/South Central Coast had a high proportion of their inventories on farms greater than 2000 acres. In contrast, the South San Joaquin Valley

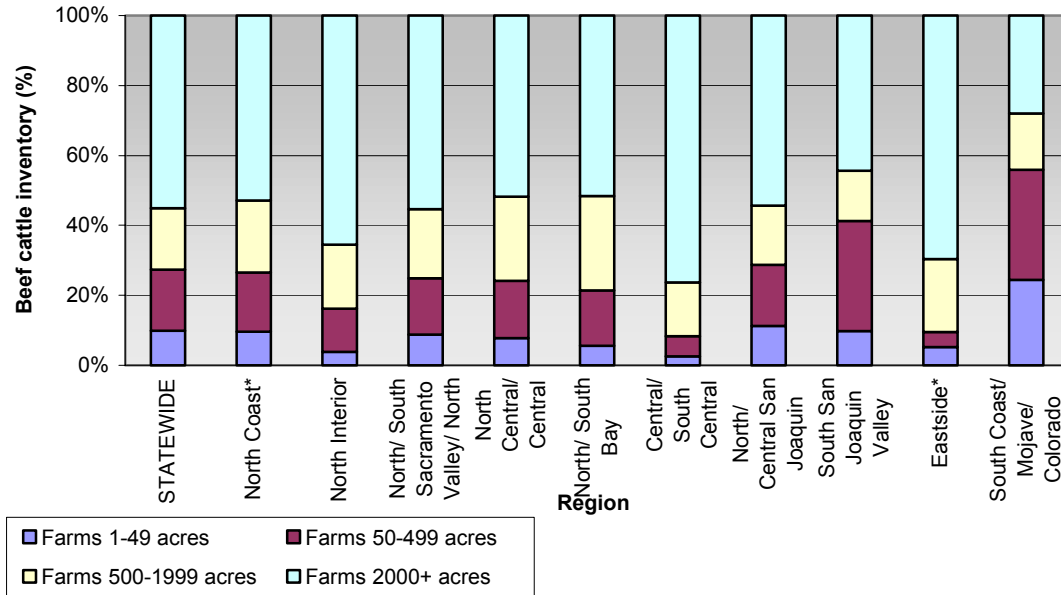
and South Coast/Mojave/Colorado Desert had a small proportion of their inventories on farms greater than 2000 acres (National Agricultural Statistics Service, 2001a) (Table 10) (Figure 17).

Table 10. Number of beef cattle farms excluding feedlots with cattle inventories by herd size and farm size, 1982-1997

Cattle and calf herd size and year	All farms	Farms 1-49 acres	Farms 50-499 acres	Farms 500-1999 acres	Farms 2000+ acres
All farms					
1982	14,243	6,964	4,088	1,811	1,380
1987	13,359	5,646	4,231	1,991	1,491
1992	11,914	4,818	3,832	1,821	1,443
1997	11,139	4,210	3,706	1,799	1,424
Farms w/ 1-49 head					
1982	9,587	6,474	2,688	375	50
1987	8,558	5,153	2,860	476	69
1992	7,307	4,351	2,503	397	56
1997	6,626	3,790	2,405	370	61
Farms w/50-199 head					
1982	2,816	413	1,250	926	227
1987	2,919	381	1,212	1,024	302
1992	2,838	363	1,163	988	324
1997	2,702	322	1,110	992	278
Farms w/200-499 head					
1982	1,010	48	117	407	438
1987	1,095	71	118	387	519
1992	1,027	70	117	351	489
1997	1,061	52	148	352	509
Farms w/500+ head					
1982	830	29	33	103	665
1987	787	41	41	104	601
1992	742	34	49	85	574
1997	750	46	43	85	576

Source: National Agricultural Statistics Service, 2001a

Figure 17. Percentage inventory of beef cattle on beef cattle farms excluding feedlots by farm size, Statewide and NASS region, 1997

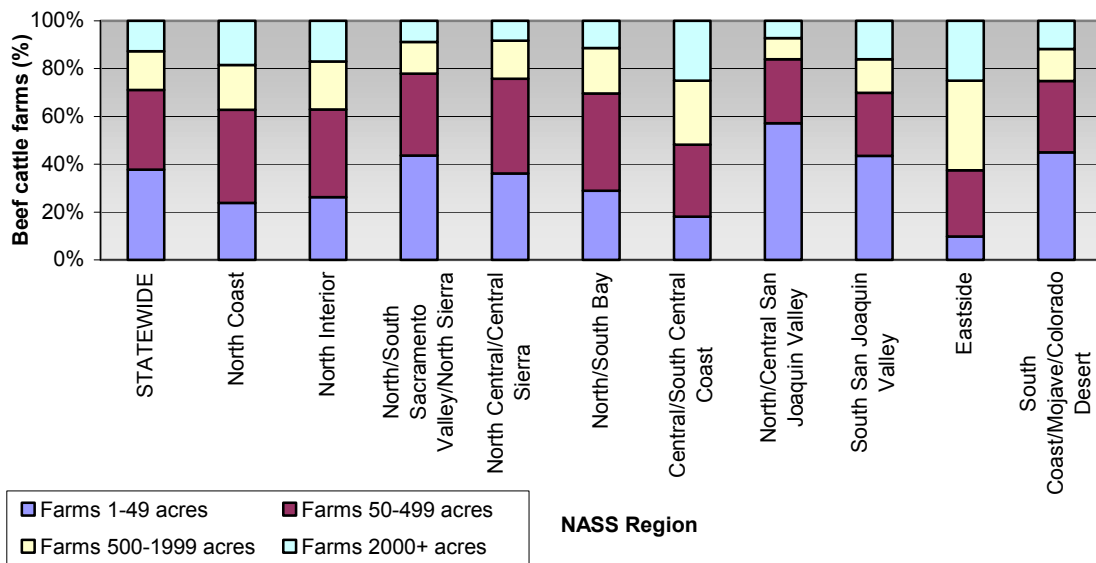


\* 1992 numbers used when 1997 was unavailable

Source: National Agricultural Statistics Service, 2001a

With the exception of the Eastside and Central/South Central region, the majority of beef cattle farms are less than 500 acres in all other regions (National Agricultural Statistics Service, 2001a). This is shown in Figure 18. For more information, see [Characteristics of the Range Livestock Industry](#).

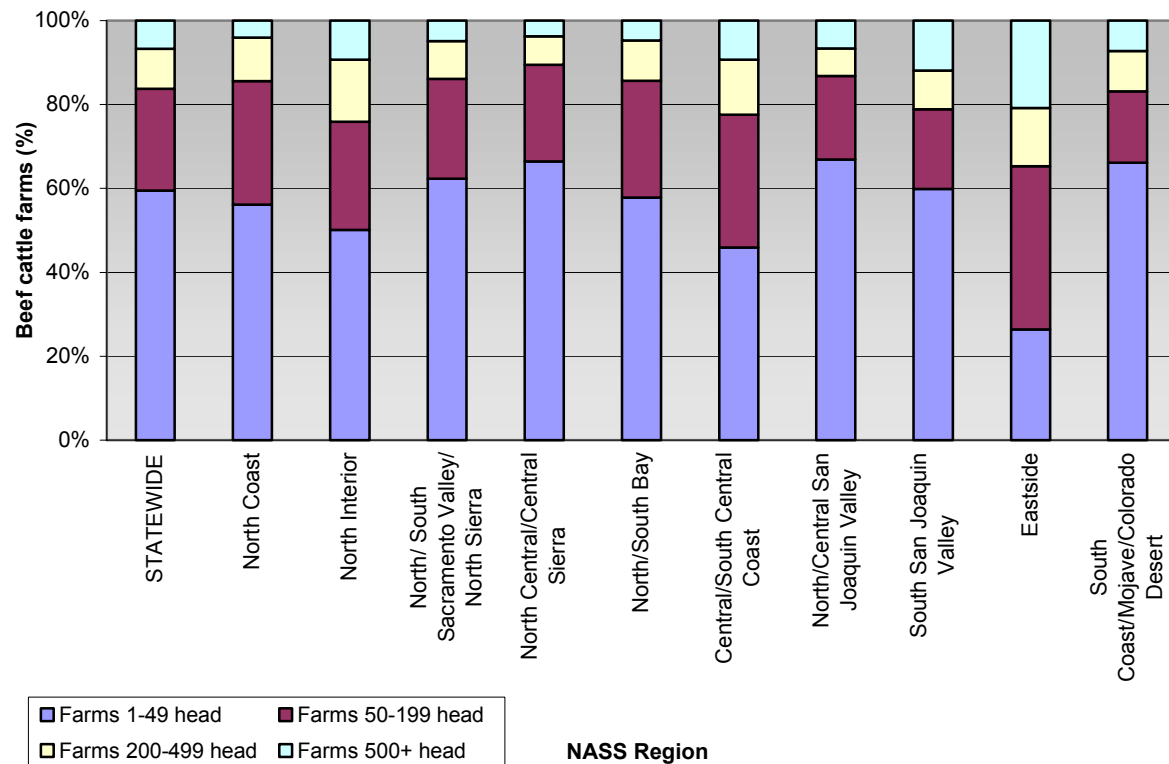
Figure 18. Percentage of beef cattle farms excluding feedlots by farm size, Statewide and NASS region, 1997



Source: National Agricultural Statistics Service, 2001a

Nearly 60 percent of beef cattle farms have herd sizes of less than fifty head. This is true in every region but the Eastside region and is shown in Figure 19. Of this number, over 90 percent are less than 500 acres. In contrast, only 7 percent of the farms have herds over 500 head and three-quarters of these farms are over 2000 acres (National Agricultural Statistics Service, 2001a).

Figure 19. Percentage of beef cattle farms excluding feedlots by herd size, Statewide and NASS region, 1997

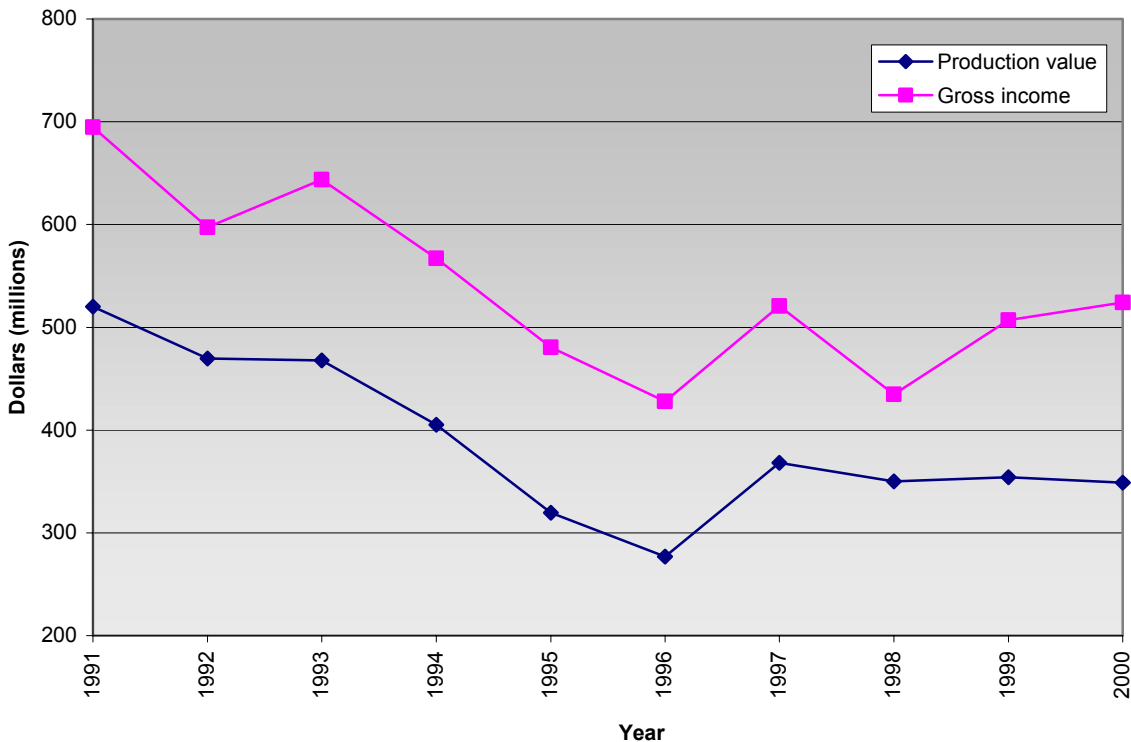


Source: National Agricultural Statistics Service, 2001a

## Cattle and calf production values

Using 41 percent as an average percent of the total cattle production value and gross income of cattle on beef cattle farms excluding feedlots, the values from 1991 to 2000 are shown in Figure 20. Production value and gross income have had similar trends between 1991-2000.

Figure 20. Gross production and income from beef cattle farms, 1991-2000



Source: National Agricultural Statistics Service, 2001b

### Cattle and calves sold

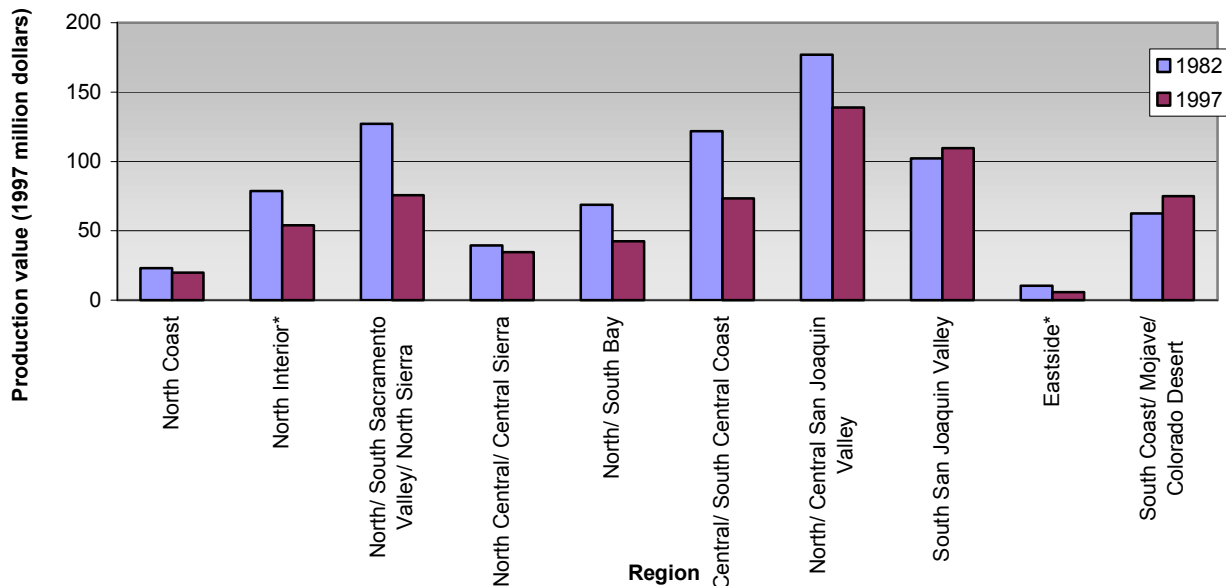
Statewide, the real value of cattle sold from beef cattle farms except feedlots declined 23 percent between 1982 and 1997. Nearly half of the total value of cattle sold originated on ownerships greater than 2000 acres (Figure 21). Farms with cattle and calves less than 500 acres in size saw cattle sale values increase while farms over 500 acres experienced decreases between 1992 and 1997 (National Agricultural Statistics Service, 2001a).

Regionally, only the South San Joaquin Valley and South Coast/Mojave/Colorado Desert had increases in the value of cattle sold from beef cattle farms excluding feedlots between 1982 and 1997. The largest cattle sale values were focused in the San Joaquin Valley regions in 1997 (Figure 21). It is important to note, the South San Joaquin Valley and South Coast/Mojave/ Colorado Desert regions had the majority of their sale value originating from farms less than 500 acres. All other regions saw their sale value dominated by farms greater than 2000 acres (National Agricultural Statistics Service, 2001a) (Figure 22). For more information, see [Characteristics of the Range Livestock Industry](#).

*Real production values of cattle and calves associated with California's forest and rangeland declined 23 percent between 1982 and 1997.*



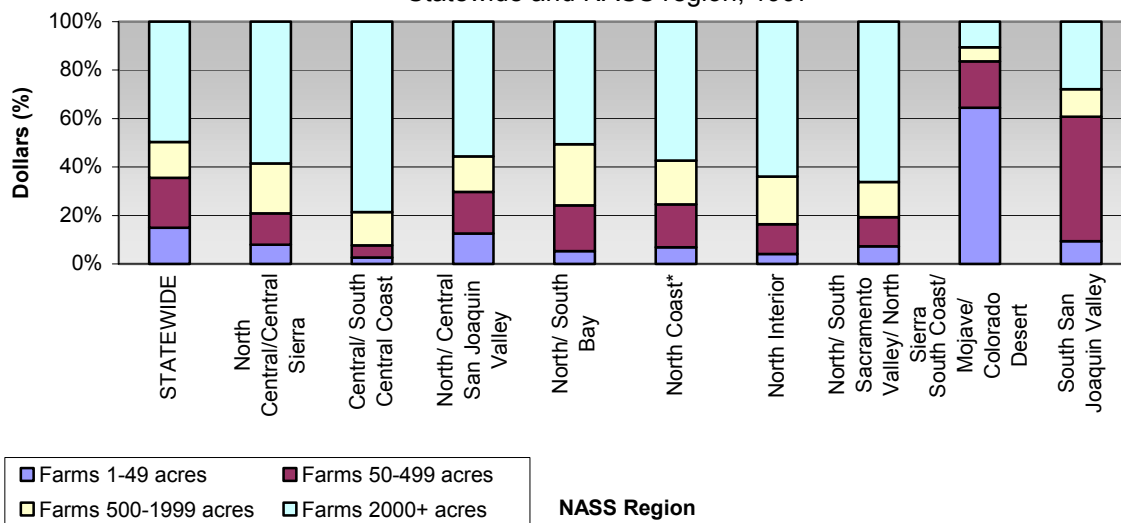
Figure 21. Real value of cattle sold from beef cattle farms excluding feedlots by NASS region, 1982 and 1997



\*1992 numbers used when 1997 were unavailable

Source: National Agricultural Statistics Service, 2001a

Figure 22. Percentage value of cattle sold from beef cattle farms excluding feedlots by farm size, Statewide and NASS region, 1997



\* 1992 numbers used when 1997 was unavailable, Eastside region is omitted due to lack of data

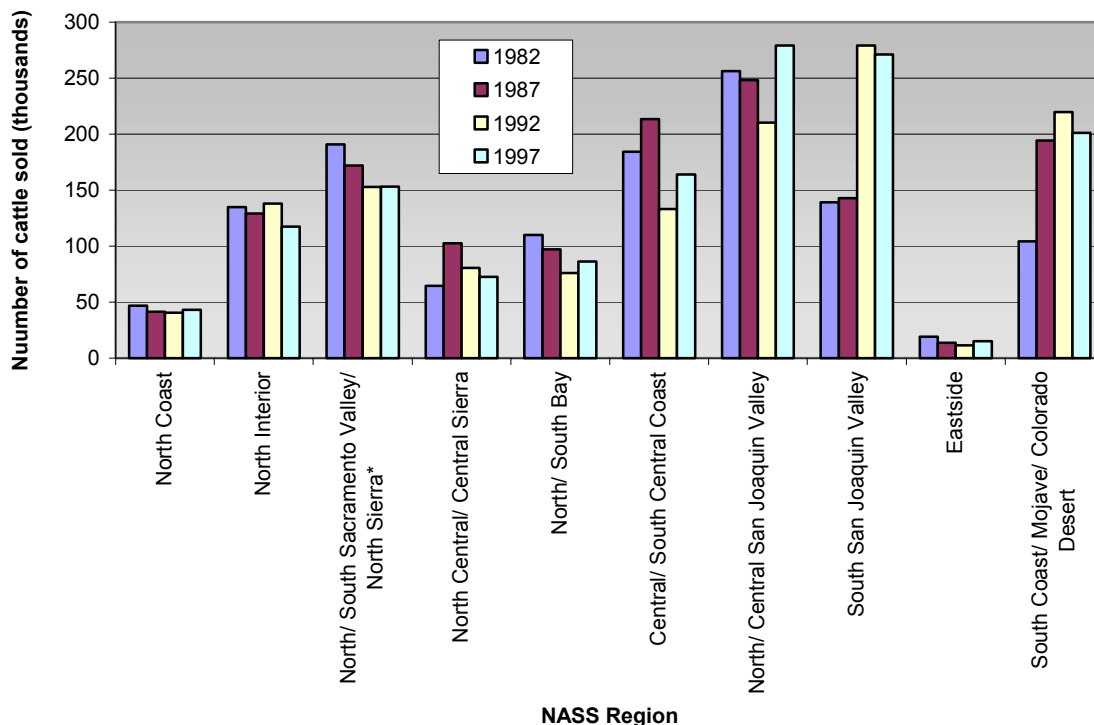
Source: National Agricultural Statistics Service, 2001a

California sold 1.4 million cattle in 1997. The majority of cattle sold from beef cattle farms excluding feedlots came from farms greater than 2000 acres (Figure 24), except in two regions. The number of cattle and calves sold from beef cattle farms increased 12 percent between 1982 and 1997 in California. That increase was due mainly to the high number of cattle sold, calf sales remained relatively

unchanged. All farm size classifications sold more cattle and calves between 1992 and 1997 except for farms greater than 2,000 acres, which had a minimal decline. Farms less than 500 acres had the greatest increase in the number of cattle sold between 1982 and 1997 (National Agricultural Statistics Service, 2001a).

In 1997, the number of cattle sold from beef cattle farms excluding feedlots was greatest within the San Joaquin Valley regions and South Coast/Mojave/Colorado Desert (Figure 23). In addition, the majority of cattle sold in South Coast/Mojave/Colorado Desert and South San Joaquin Valley regions originated on farms less than 500 acres (Figure 24). The San Joaquin Valley regions and South Coast/Mojave/Colorado Desert were the only regions to have significant increases in the number of cattle sold between 1982 and 1997 (Figure 23) (National Agricultural Statistics Service, 2001a). For more information, see [Characteristics of the Range Livestock Industry](#).

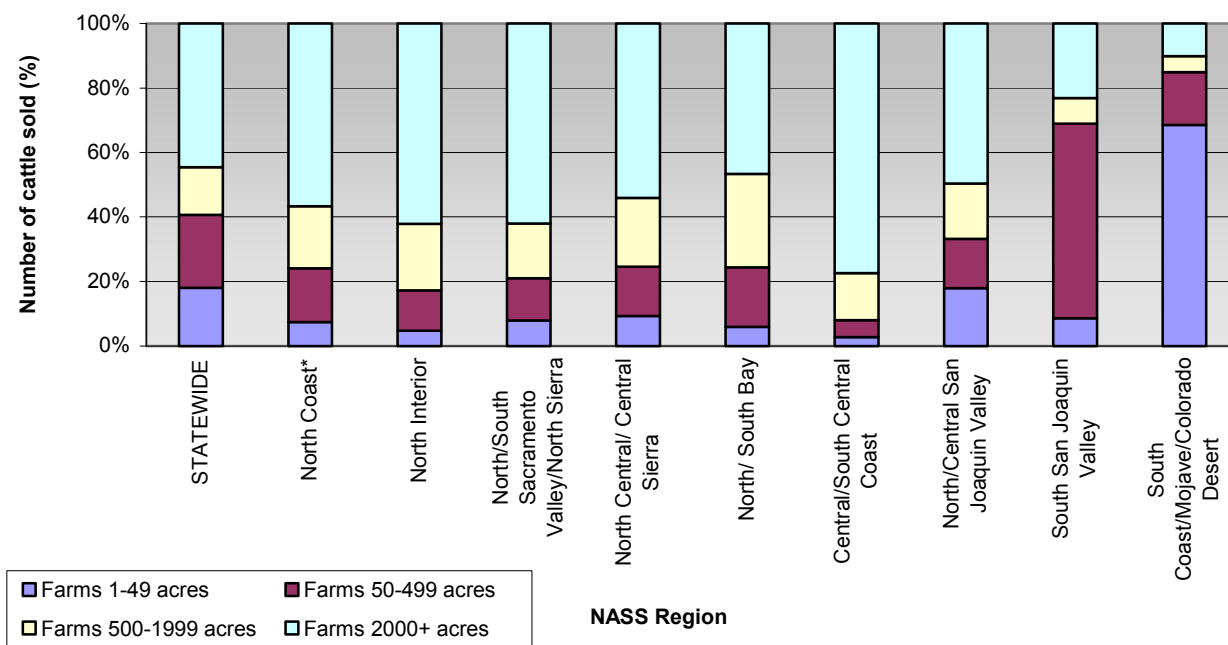
Figure 23. Number of cattle sold from beef cattle farms excluding feedlots by NASS region, 1982-1997



\*1987 was estimated using the 1982 and 1992 average

Source: National Agricultural Statistics Service, 2001a

Figure 24. Percentage inventory of cattle sold from beef cattle farms by farm size, Statewide and NASS region, 1997



\* 1992 numbers used when 1997 was unavailable, Eastside region is omitted due to lack of data

Source: National Agricultural Statistics Service, 2001a

## Feedlots

California exports many head of beef cattle to other states for finishing. Lower feedlot costs in other states make this advantageous. Although it is a net exporter of calves, California does have a feedlot presence (Lawrence and Otto, 2001). While small in comparison to Kansas, Nebraska, and Texas, California had the fifth highest number of cattle and calves in feedlots with over 1,000 head capacity in the United States in 2000 and 2001 with well over half in Imperial County (California Agricultural Statistics Service, 2001c). The number of cattle marketed from feedlots has fallen consistently since the mid-1980s to below 600,000 animals per year from 1993-1999.

**Feedlots in the United States:** The United States has the largest fed-cattle industry in the world and is the world's largest producer of beef, primarily high-quality grain-fed beef for domestic and export use. Feeding can occur as general fed-cattle marketing (ranchers), producer fed-cattle marketing, and meatpacker fed-cattle marketing (U.S. General Accounting Office, 1997). Cattle feeding is concentrated in the Great Plains but is also important in parts of the Midwest, Southwest, and Pacific Northwest.

## Meat packers

Meat packers process animals into meat and a variety of other products. They also add value by such things as closer trimming, more boneless cuts, improved packaging, and different kinds of product branding. Meat packers have also improved byproducts through blue chrome tanning of hides and promoting international markets for beef variety meats (Lambert, 2001c).

Over the last three decades, the technology of meat processing and shipping has undergone rapid change. At the heart of this has been the development of the "boxed-beef" technology where carcasses are

butchered into individual cuts, packed and shipped from the slaughtering plant. This approach is capital intensive and gives significant economies of scale.

The changing technology, declining consumption, and other reasons have led to a concentration in the packing industry. By 1999, the four leading beef packers held just over 80 percent of the market share. Within California, there has also been a decrease in both the number of firms and total packing capacity. In 2001, aside from small specialty operations, only three firms process significant numbers of cattle within the State, and none in northern California (Anderson et al., 2002).

A substantial volume of feeder cattle are purchased at a significant discount from California, shipped to the Midwest for fattening, processing, and then are reshipped to California for retail (Levi et al, [ND]). Additional cattle are sent for processing to plants in other western states (Anderson et al., 2002).